Technical Report No. 122

# SOIL NUTRIENT-PLANT NUTRIENT RELATIONSHIPS AT THE PAWNEE SITE

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## ABSTRACT

This investigation was initiated to study the soil nutrient-plant nutrient relationships of blue grama (*Bouteloua gracilis* (H.B.K.) Lag. ex Steud.) and wheat (*Triticum aestivum* Z.). This report includes methodology of data collection and the results of chemical analysis for the soil samples.

## INTRODUCTION

The Pawnee Site of the Grasslands Biome, International Biological Program, was selected for intensive study of the structure and function of a grassland ecosystem. The major objectives for the Pawnee Site research program are to determine the availability and magnitudes of rates of energy flow and nutrient cycling and to encompass the parameters and variables of these processes into mathematical models.

This study was designed to obtain a better understanding of soil nutrient-plant nutrient relationships. Due to limitations of manpower and finances, not all nutrients can be studied in detail as nitrogen and phosphorus are being studied (Reuss and Copley 1969). In order to investigate the effects of many nutrients, therefore, we used a "shotgun" approach by sampling many plant-soil situations and studying the interrelationships between plant nutrients and soil nutrients through multivariate analysis techniques.

## DESCRIPTION OF STUDY AREA

Two sites were chosen to sample for this study. Blue grama (*Bouteloua gracilis* (H.B.K.) Lag. ex Steud.) samples were collected on the Pawnee Site, US-IBP Grassland Biome.[1/] The sampled plots were in Weld County, Colorado, 40 miles northeast of Fort Collins in Township 10 N., Ranges 66 and 67 W. The wheat (*Triticum aestivum* L.) samples were collected in Weld County, Colorado, four miles east of Pierce in Township 8 N., Ranges 66 and

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[1/] The Pawnee Site is located on the Central Plains Experimental Range (Agricultural Research Service, USDA) and adjacent areas of the Pawnee National Grassland (Forest Service, USDA).

67 W.[2/] All samples for both wheat and blue grama were collected on sandy-loam soils of the Ascalon Series.[3/]

## METHODS

### Wheat

To determine standing crop biomass for wheat, double sampling was used; 30 .25 sq mile plots were estimated and five of these were then clipped and oven dried at 50°C for each of 23 fields. A correction factor (CF) for observations within each field was calculated as:

$$CF = \frac{\Sigma \text{ Dry weights of clipped plots}}{\Sigma \text{ Estimated weights of clipped plots}}$$

Means and standard deviations for fields are calculated from the corrected observations. Three root cores (7.5 cm diameter and 10 cm deep) for each clipped plot were also taken to determine root biomass. Two root cores (5 cm diameter and 80 cm deep) per field were taken to obtain an idea of root distribution and to possibly adjust size of root sampling unit next year. Processing of root cores, washing and ashing was described in Technical Report No. 2 (Bartos and Hughes 1969).

For chemical analysis three composite samples per field were collected for both soils and standing crop. Each soil sample was a composite of five cores (7.5 cm × 10 cm) paired with a composite standing crop sample. The

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[2/] Wheat was sampled on private lands. Thanks go to the close cooperation of the operators of farms sampled.

[3/] Soil mapping was done by James Crabb of the Soil Conservation Service.

soil samples were air dried and sieved through 32-mesh brass Tyler screens. The plant samples were rinsed quickly two times in deionized water, oven dried at 50°C and ground in a Wiley mill with a 40-mesh screen.

The soil samples are analyzed for pH, conductivity of salts, lime, organic matter, phosphorus, potassium, nitrate nitrogen, zinc, iron, copper, manganese, sand, silt, clay, texture, sulfate sulfur, and cation exchange capacity. The plant samples analysis tentatively planned are phosphorus, calcium, magnesium, potassium, zinc, iron, copper, manganese, sulfur, nitrogen, sodium, cobalt, and molybdenum.

Blue Grama

Blue grama standing crop biomass was not determined in this study, but the data is available from another study on the Pawnee Site (Sims et al. 1971).

For chemical analysis 60 composite samples were collected for both soils and standing crop. Five soil cores (7.5 cm and 10 cm) were composited and paired with a composite standing crop sample. The processing of samples and analyses of plant soil materials for this portion of the study were the same as for the wheat samples.

## PRELIMINARY RESULTS

The means and standard deviations for standing crop biomass of wheat is given for each field in Table 1. The mean of all fields is 91.15 g/.25 $m^2$ or 3646 kg/ha. The standard deviations for field means is 27.87 g/.25 $m^2$. Tables 2 and 3 give the data for root weights of the wheat fields.

Table 1. Aboveground biomass for wheat fields with calculated correction factors, means, and standard deviations for corrected observations.

| | Field No. | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 11 | 21 | 22 | 31 | 32 | 33 | 41 | 51 |
| Observations Within Each Field | 256 | 115 | 114 | 122 | 451 | 81 | 198 | 133 |
| | 369 | 87 | 90 | 161 | 454 | 67 | 212 | 85 |
| | 291 | 53 | 257 | 147 | 445 | 48 | 223 | 73 |
| | 403 | 69 | 111 | 74 | 316 | 103 | 480 | 42 |
| | 448 | 33 | 132 | 213 | 319 | 233 | 508 | 56 |
| | 184* | 133* | 153* | 87* | 153* | 49* | 314* | 107* |
| | 263 | 85 | 106 | 142 | 369 | 168 | 236 | 42 |
| | 358 | 94 | 157 | 104 | 309 | 153 | 133 | 110 |
| | 318 | 87 | 193 | 127 | 324 | 71 | 225 | 86 |
| | 493 | 342 | 91 | 253 | 440 | 112 | 181 | 133 |
| | 485 | 48 | 118 | 167 | 613 | 204 | 173 | 212 |
| | 403* | 45* | 96* | 67* | 255* | 229* | 294* | 54* |
| | 306 | 56 | 136 | 149 | 242 | 231 | 187 | 146 |
| | 283 | 123 | 53 | 216 | 279 | 103 | 88 | 57 |
| | 261 | 39 | 319 | 198 | 391 | 159 | 162 | 143 |
| | 138 | 63 | 343 | 193 | 500 | 196 | 139 | 147 |
| | 118 | 15 | 641 | 57 | 296 | 152 | 111 | 112 |
| | 183* | 63* | 159* | 315* | 259* | 214* | 226* | 313* |
| | 225 | 99 | 159 | 196 | 425 | 96 | 209 | 117 |
| | 230 | 128 | 81 | 117 | 484 | 198 | 63 | 124 |
| | 354 | 185 | 157 | 187 | 463 | 357 | 365 | 259 |
| | 195 | 61 | 53 | 446 | 651 | 345 | 158 | 251 |
| | 548 | 90 | 97 | 63 | 537 | 567 | 244 | 185 |
| | 354* | 223* | 62* | 286* | 293* | 223* | 92* | 140* |
| | 408 | 108 | 87 | 239 | 690 | 191 | 358 | 319 |
| | 393 | 153 | 132 | 123 | 405 | 204 | 209 | 118 |
| | 110 | 44 | 325 | 186 | 311 | 174 | 123 | 181 |
| | 287 | 164 | 234 | 346 | 414 | 214 | 44 | 154 |
| | 328 | 171 | 246 | 338 | 361 | 234 | 223 | 177 |
| | 240* | 87* | 263* | 217* | 518* | 178* | 202* | 187* |
| Correction Factor | .45 | .45 | .42 | .34 | .42 | .39 | .45 | .43 |
| Mean | 138.82 | 45.97 | 72.41 | 62.85 | 167.65 | 72.47 | 95.94 | 61.26 |
| Standard Deviation | 48.59 | 30.74 | 50.93 | 31.62 | 51.17 | 41.29 | 49.08 | 32.93 |

Table 1. (Continued).

| | Field No. | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 52 | 53 | 71 | 72 | 73 | 74 | 75 | 76 |
| Observations Within Each Field | 323 | 192 | 460 | 389 | 166 | 143 | 221 | 220 |
| | 417 | 243 | 176 | 137 | 231 | 209 | 249 | 291 |
| | 228 | 268 | 163 | 187 | 172 | 173 | 63 | 265 |
| | 404 | 198 | 412 | 379 | 137 | 219 | 239 | 272 |
| | 481 | 312 | 143 | 158 | 398 | 93 | 140 | 128 |
| | 231* | 223* | 524* | 263* | 243* | 231* | 329* | 396* |
| | 242 | 235 | 415 | 143 | 283 | 193 | 214 | 231 |
| | 179 | 267 | 392 | 239 | 489 | 173 | 243 | 111 |
| | 93 | 309 | 572 | 230 | 342 | 339 | 138 | 295 |
| | 265 | 160 | 516 | 336 | 434 | 221 | 179 | 103 |
| | 216 | 244 | 236 | 135 | 516 | 127 | 318 | 99 |
| | 262* | 288* | 182* | 339* | 601* | 169* | 439* | 213* |
| | 297 | 315 | 102 | 253 | 76 | 483 | 186 | 117 |
| | 282 | 402 | 241 | 216 | 286 | 468 | 298 | 115 |
| | 223 | 493 | 69 | 272 | 284 | 139 | 281 | 75 |
| | 145 | 184 | 159 | 183 | 356 | 345 | 187 | 39 |
| | 212 | 101 | 339 | 258 | 207 | 432 | 126 | 127 |
| | 478* | 232* | 204* | 269* | 273* | 258* | 385* | 187* |
| | 279 | 167 | 119 | 329 | 152 | 349 | 221 | 103 |
| | 128 | 306 | 58 | 223 | 179 | 383 | 203 | 59 |
| | 262 | 585 | 44 | 276 | 147 | 337 | 84 | 159 |
| | 88 | 629 | 29 | 283 | 169 | 327 | 166 | 28 |
| | 213 | 320 | 97 | 495 | 109 | 423 | 09 | 31 |
| | 194* | 69* | 329* | 176* | 131* | 419* | 411* | 159* |
| | 204 | 107 | 29 | 534 | 84 | 431 | 183 | 97 |
| | 378 | 94 | 35 | 449 | 213 | 398 | 243 | 109 |
| | 214 | 264 | 163 | 267 | 309 | 132 | 238 | 118 |
| | 136 | 500 | 265 | 297 | 139 | 132 | 154 | 255 |
| | 144 | 589 | 232 | 331 | 169 | 214 | 172 | 127 |
| | 231* | 65* | 203* | 367* | 197* | 398* | 91* | 225* |
| Correction Factor | .43 | .44 | .40 | .36 | .42 | .42 | .42 | .46 |
| Mean | 106.93 | 122.90 | 92.18 | 101.12 | 104.99 | 117.17 | 89.95 | 73.07 |
| Standard Deviation | 42.59 | 67.58 | 63.17 | 36.76 | 52.85 | 50.07 | 43.18 | 41.74 |

Table 1. (Continued).

| | Field No. | | | | | | |
|---|---|---|---|---|---|---|---|
| | 77 | 81 | 82 | 83 | 84 | 85 | 86 |
| Observations Within Each Field | 438 | 429 | 393 | 93 | 60 | 103 | 150 |
| | 173 | 404 | 174 | 169 | 79 | 65 | 264 |
| | 389 | 173 | 228 | 35 | 87 | 172 | 334 |
| | 298 | 274 | 241 | 151 | 111 | 160 | 309 |
| | 160 | 403 | 334 | 177 | 139 | 591 | 71 |
| | 298* | 568* | 208* | 78* | 256* | 146* | 359* |
| | 126 | 506 | 253 | 217 | 112 | 356 | 276 |
| | 78 | 99 | 226 | 108 | 132 | 389 | 228 |
| | 76 | 494 | 239 | 132 | 136 | 141 | 288 |
| | 363 | 287 | 275 | 266 | 167 | 371 | 147 |
| | 137 | 263 | 117 | 65 | 138 | 289 | 310 |
| | 193* | 248* | 276* | 72* | 232* | 135* | 308* |
| | 187 | 116 | 189 | 173 | 93 | 195 | 96 |
| | 235 | 103 | 221 | 305 | 152 | 63 | 86 |
| | 318 | 244 | 255 | 219 | 146 | 74 | 27 |
| | 108 | 196 | 187 | 300 | 151 | 64 | 122 |
| | 311 | 156 | 173 | 270 | 79 | 59 | 91 |
| | 72* | 79* | 171* | 159* | 129* | 278* | 220* |
| | 186 | 186 | 91 | 97 | 74 | 324 | 86 |
| | 93 | 167 | 249 | 106 | 126 | 38 | 121 |
| | 242 | 196 | 360 | 131 | 69 | 27 | 182 |
| | 151 | 179 | 258 | 282 | 233 | 53 | 286 |
| | 168 | 249 | 284 | 129 | 304 | 151 | 51 |
| | 66* | 138* | 209* | 213* | 163* | 129* | 151* |
| | 102 | 131 | 184 | 252 | 138 | 343 | 164 |
| | 57 | 143 | 159 | 236 | 119 | 207 | 119 |
| | 148 | 102 | 320 | 314 | 163 | 193 | 155 |
| | 160 | 258 | 233 | 204 | 199 | 169 | 36 |
| | 448 | 195 | 176 | 264 | 388 | 221 | 42 |
| | 104* | 212* | 233* | 161* | 174* | 216* | 163* |
| Correction Factor | .44 | .40 | .45 | .40 | .41 | .40 | .42 |
| Mean | 86.39 | 96.34 | 104.04 | 71.77 | 62.27 | 76.31 | 73.70 |
| Standard Deviation | 50.34 | 51.53 | 29.61 | 32.21 | 30.54 | 51.85 | 43.31 |

* Estimated weights for clipped plots.

Table 2. Weight of root material collected in wheat fields using cores of 5.0 cm diameter and 80 cm deep.

| | Plot | Core | Depths | | | | | Total |
|---|---|---|---|---|---|---|---|---|
| | | | 0-10 | 10-20 | 20-40 | 40-60 | 60-80 | |
| | | | -------Grams per $m^2$/cm Depth------- | | | | | $g/m^2$/80 cm |
| Field 11 | 1 | 1 | 27.145 | 1.446 | 5.045 | 6.300 | 1.006 | 666.157 |
| | 2 | 1 | 18.518 | 10.960 | 7.056 | 5.085 | 4.568 | 786.224 |
| Mean | | | 22.832 | 6.203 | 6.050 | 5.693 | 2.787 | 726.190 |
| SE | | | 4.314 | 4.757 | 1.006 | .607 | 1.781 | 60.033 |
| Field 21 | 1 | 1 | 5.073 | 1.804 | 1.090 | 1.001 | .024 | 138.820 |
| | 2 | 1 | 19.796 | 2.338 | .476 | .670 | .108 | 308.010 |
| Mean | | | 12.434 | 2.071 | .783 | .835 | .066 | 223.415 |
| SE | | | 7.362 | .267 | .307 | .166 | .042 | 84.595 |
| Field 22 | 1 | 1 | 16.735 | 2.934 | .792 | .206 | 1.028 | 296.521 |
| | 2 | 1 | 24.176 | .963 | .741 | .321 | .079 | 342.755 |
| Mean | | | 20.456 | 1.948 | .766 | .264 | .554 | 319.638 |
| SE | | | 3.720 | .985 | .025 | .057 | .475 | 23.117 |
| Field 31 | 1 | 1 | 59.761 | 2.042 | .598 | 1.049 | .983 | 838.299 |
| | 2 | 1 | 13.522 | 1.268 | .512 | .341 | .659 | 222.668 |
| Mean | | | 36.641 | 1.655 | .555 | .695 | .821 | 530.483 |
| SE | | | 23.119 | .387 | .043 | .354 | .162 | 307.816 |
| Field 32 | 1 | 1 | 19.384 | 1.727 | .794 | 2.633 | .491 | 361.854 |
| | 2 | 1 | 20.988 | .835 | 1.258 | .858 | 1.640 | 366.692 |
| Mean | | | 20.186 | 1.281 | 1.026 | 1.746 | 1.066 | 364.273 |
| SE | | | .802 | .446 | .232 | .887 | .574 | 2.419 |

Table 2. (Continued).

| | Plot | Core | Depths 0-10 | 10-20 | 20-40 | 40-60 | 60-80 | Total |
|---|---|---|---|---|---|---|---|---|
| | | | -------Grams per $m^2$/cm Depth------- | | | | | $g/m^2$/80 cm |
| Field 33 | 1 | 1 | 35.447 | 1.064 | .680 | .525 | 2.277 | 543.417 |
| | 2 | 1 | 15.574 | 1.910 | 2.338 | 3.557 | .760 | 384.928 |
| Mean | | | 25.511 | 1.487 | 1.509 | 2.041 | 1.518 | 464.173 |
| SE | | | 9.936 | .423 | .829 | 1.516 | .758 | 79.245 |
| Field 41 | 1 | 1 | 38.472 | .942 | .469 | 1.454 | .924 | 563.853 |
| | 2 | 1 | 45.933 | 1.120 | .514 | .583 | .028 | 616.310 |
| Mean | | | 42.203 | 1.031 | .491 | 1.019 | .476 | 590.081 |
| SE | | | 3.731 | .089 | .023 | .435 | .448 | 26.229 |
| Field 51 | 1 | 1 | 6.458 | .183 | .405 | 1.140 | .871 | 143.424 |
| | 2 | 1 | 5.455 | 1.304 | .680 | 1.150 | 1.337 | 163.675 |
| Mean | | | 5.956 | .744 | .542 | 1.146 | 1.104 | 153.549 |
| SE | | | .502 | .560 | .138 | .006 | .233 | 10.125 |
| Field 52 | 1 | 1 | 6.748 | 5.006 | 1.148 | .876 | .321 | 205.564 |
| | 2 | 1 | 34.006 | 1.431 | .410 | .700 | .835 | 491.597 |
| Mean | | | 20.377 | 3.219 | .779 | .788 | .578 | 348.580 |
| SE | | | 13.629 | 1.788 | .369 | .088 | .257 | 143.016 |
| Field 53 | 1 | 1 | 22.552 | 3.759 | 2.534 | 1.230 | 1.222 | 453.527 |
| | 2 | 1 | 7.196 | 2.659 | .466 | 1.440 | 1.444 | 199.432 |
| Mean | | | 14.874 | 3.209 | 1.500 | 1.185 | 1.333 | 326.479 |
| SE | | | 7.678 | .550 | 1.034 | .045 | .111 | 127.047 |

Table 2. (Continued).

| | Plot | Core | Depths 0-10 | 10-20 | 20-40 | 40-60 | 60-80 | Total |
|---|---|---|---|---|---|---|---|---|
| | | | -------Grams per $m^2$/cm Depth------- | | | | | $g/m^2$/80 cm |
| Field 71 | 1 | 1 | 20.000 | .418 | .738 | .952 | .313 | 305.322 |
| | 2 | 1 | 26.290 | .927 | 2.050 | 5.539 | .843 | 550.993 |
| Mean | | | 23.145 | .672 | 1.394 | 3.245 | .578 | 428.158 |
| SE | | | 3.145 | .255 | .656 | 2.293 | .265 | 122.835 |
| Field 72 | 1 | 1 | 24.441 | .433 | .891 | .346 | 1.263 | 373.440 |
| | 2 | 1 | 9.977 | .871 | .741 | .433 | 1.287 | 197.118 |
| Mean | | | 17.209 | .652 | .816 | .390 | 1.275 | 285.279 |
| SE | | | 7.232 | .219 | .075 | .043 | .012 | 88.161 |
| Field 74 | 1 | 1 | 8.144 | 1.543 | .318 | .354 | .135 | 141.266 |
| | 2 | 1 | 45.236 | 1.849 | .519 | .835 | 1.057 | 648.841 |
| Mean | | | 26.690 | 1.696 | .419 | .595 | .596 | 395.053 |
| SE | | | 18.546 | .153 | .101 | .241 | .461 | 253.788 |
| Field 75 | 1 | 1 | 25.682 | 1.156 | .751 | 1.075 | 1.118 | 409.069 |
| | 2 | 1 | 21.024 | 1.309 | .458 | .514 | .772 | 322.765 |
| Mean | | | 23.353 | 1.232 | .605 | .794 | .945 | 365.917 |
| SE | | | 2.329 | .076 | .146 | .280 | .173 | 43.152 |
| Field 76 | 1 | 1 | 71.811 | 1.721 | .306 | .576 | .400 | 951.171 |
| | 2 | 1 | 34.800 | 1.793 | .912 | .871 | .311 | 509.740 |
| Mean | | | 53.305 | 1.757 | .609 | .723 | .355 | 730.456 |
| SE | | | 18.505 | .036 | .303 | .148 | .045 | 220.716 |

Table 2. (Continued).

| | Plot | Core | Depths 0-10 | 10-20 | 20-40 | 40-60 | 60-80 | Total |
|---|---|---|---|---|---|---|---|---|
| | | | -------Grams per $m^2$/cm Depth------- | | | | | $g/m^2$/80 cm |
| Field 77 | 1 | 1 | 48.790 | 2.582 | .682 | .295 | .542 | 680.163 |
| | 2 | 1 | 78.039 | 2.226 | .563 | 1.472 | .122 | 1057.232 |
| Mean | | | 63.415 | 2.404 | .623 | .884 | .332 | 868.697 |
| SE | | | 14.624 | .178 | .060 | .588 | .210 | 188.535 |
| Field 81 | 1 | 1 | 21.350 | 3.102 | .856 | .532 | .851 | 361.599 |
| | 2 | 1 | 19.002 | .881 | .756 | .306 | .512 | 287.879 |
| Mean | | | 20.176 | 1.991 | .806 | .419 | .681 | 324.739 |
| SE | | | 1.174 | 1.110 | .050 | .113 | .169 | 36.860 |
| Field 82 | 1 | 1 | 21.329 | .637 | 1.367 | .418 | .749 | 337.917 |
| | 2 | 1 | 26.122 | .565 | 1.727 | .494 | 1.057 | 415.521 |
| Mean | | | 23.725 | .601 | 1.547 | .456 | .903 | 376.719 |
| SE | | | 2.396 | .036 | .180 | .038 | .154 | 38.802 |
| Field 83 | 1 | 1 | 15.590 | .952 | 1.036 | .153 | .173 | 240.833 |
| | 2 | 1 | 21.268 | 2.205 | .672 | .364 | .769 | 338.554 |
| Mean | | | 18.429 | 1.579 | .854 | .258 | .471 | 289.693 |
| SE | | | 2.839 | .626 | .182 | .106 | .298 | 48.860 |
| Field 84 | 1 | 1 | 8.052 | 1.920 | 1.395 | 1.064 | .323 | 194.232 |
| | 2 | 1 | 12.218 | 1.620 | .514 | .489 | .609 | 213.267 |
| Mean | | | 10.135 | 1.770 | .955 | .777 | .466 | 203.750 |
| SE | | | 2.083 | .150 | .441 | .288 | .143 | 9.517 |

Table 2. (Continued).

| | Plot | Core | Depths | | | | | Total |
|---|---|---|---|---|---|---|---|---|
| | | | 0-10 | 10-20 | 20-40 | 40-60 | 60-80 | |
| | | | -------Grams per $m^2$/cm Depth------- | | | | | $g/m^2$/80 cm |
| Field 85 | 1 | 1 | 46.468 | 1.472 | .456 | .150 | .741 | 632.926 |
| | 2 | 1 | 23.967 | .565 | .201 | 1.197 | .563 | 355.679 |
| Mean | | | 35.218 | 1.019 | .328 | .674 | .652 | 494.302 |
| SE | | | 11.250 | .453 | .127 | .523 | .089 | 138.624 |
| Field 86 | 1 | 1 | 25.618 | 2.108 | 1.128 | .547 | .760 | 407.464 |
| | 2 | 1 | 30.542 | .815 | 1.194 | .527 | .700 | 452.508 |
| Mean | | | 28.080 | 1.462 | 1.161 | .537 | .730 | 429.986 |
| SE | | | 2.462 | .647 | .033 | .010 | .030 | 22.522 |

Table 3. Weight of root material collected in wheat fields using 7.5 cm diameter and 10 cm deep cores. The totals were calculated by the percent distribution calculated from Table 2.

FIELD 11

| PLOT | CORE | 0-10 CM G/MSQ/CM DEPTH | TOTAL G/MSQ |
|---|---|---|---|
| 56 | 1 | 17.692 | 249.197 |
| 56 | 2 | 14.394 | 207.972 |
| 56 | 3 | 38.023 | 503.335 |
| MEAN | | 23.369 | 320.168 |
| 26 | 1 | 12.823 | 188.336 |
| 26 | 2 | 20.322 | 282.075 |
| 26 | 3 | 25.496 | 346.755 |
| MEAN | | 19.547 | 272.389 |
| 36 | 1 | 7.055 | 116.243 |
| 36 | 2 | 30.725 | 412.115 |
| 36 | 3 | 6.428 | 108.405 |
| MEAN | | 14.736 | 212.254 |
| 16 | 1 | 20.650 | 286.177 |
| 16 | 2 | 19.036 | 266.004 |
| 16 | 3 | 24.098 | 329.269 |
| MEAN | | 21.261 | 293.817 |
| 46 | 1 | 18.550 | 259.921 |
| 46 | 2 | 15.304 | 219.347 |
| 46 | 3 | 14.303 | 206.841 |
| MEAN | | 16.052 | 228.703 |
| MEAN | | 18.993 | 265.466 |
| STD ERROR | | 1.603 | 20.034 |

FIELD 21

| PLOT | CORE | 0-10 CM G/MSQ/CM DEPTH | TOTAL G/MSQ |
|---|---|---|---|
| 56 | 1 | 2.261 | 56.316 |
| 56 | 2 | 9.695 | 149.234 |
| 56 | 3 | .215 | 30.738 |
| MEAN | | 4.057 | 78.763 |
| 26 | 1 | 5.654 | 98.729 |
| 26 | 2 | .620 | 35.803 |
| 26 | 3 | 1.073 | 41.461 |
| MEAN | | 2.449 | 58.664 |
| 16 | 1 | 7.474 | 121.475 |
| 16 | 2 | 3.124 | 67.096 |
| 16 | 3 | 5.645 | 98.616 |
| MEAN | | 5.414 | 95.729 |
| 36 | 1 | 1.394 | 45.479 |
| 36 | 2 | .724 | 37.104 |
| 36 | 3 | 39.318 | 519.519 |
| MEAN | | 13.812 | 200.701 |
| 46 | 1 | 1.759 | 50.035 |
| 46 | 2 | 5.485 | 96.607 |
| 46 | 3 | 5.195 | 92.985 |
| MEAN | | 4.146 | 79.875 |
| MEAN | | 5.976 | 102.746 |
| STD ERROR | | 2.015 | 25.185 |

FIELD 22

| PLOT | CORE | 0-10 CM G/MSQ/CM DEPTH | TOTAL G/MSQ |
|---|---|---|---|
| 56 | 1 | 2.338 | 57.278 |
| 56 | 2 | .779 | 37.783 |
| 56 | 3 | 46.565 | 610.117 |
| MEAN | | 16.561 | 235.059 |
| 36 | 1 | .179 | 30.285 |
| 36 | 2 | 3.164 | 67.605 |
| 36 | 3 | 14.754 | 212.471 |
| MEAN | | 6.032 | 103.454 |
| 46 | 1 | 2.381 | 57.815 |
| 46 | 2 | 9.860 | 151.299 |
| 46 | 3 | .831 | 38.434 |
| MEAN | | 4.357 | 82.516 |
| 26 | 1 | 1.994 | 52.977 |
| 26 | 2 | 1.922 | 52.072 |
| 26 | 3 | 7.682 | 124.080 |
| MEAN | | 3.866 | 76.376 |
| 16 | 1 | 1.347 | 44.885 |
| 16 | 2 | 4.074 | 78.979 |
| 16 | 3 | 1.057 | 41.263 |
| MEAN | | 2.159 | 55.043 |
| MEAN | | 6.595 | 110.490 |
| STD ERROR | | 2.567 | 32.084 |

FIELD 31

| PLOT | CORE | 0-10 CM G/MSQ/CM DEPTH | TOTAL G/MSQ |
|---|---|---|---|
| 46 | 1 | .168 | 30.144 |
| 46 | 2 | 14.792 | 212.952 |
| 46 | 3 | 24.014 | 328.223 |
| MEAN | | 12.991 | 190.440 |
| 26 | 1 | 4.740 | 87.298 |
| 26 | 2 | 4.916 | 89.505 |
| 26 | 3 | 5.657 | 98.757 |
| MEAN | | 5.104 | 91.853 |
| 56 | 1 | 2.311 | 56.938 |
| 56 | 2 | 5.482 | 96.578 |
| 56 | 3 | 2.691 | 61.692 |
| MEAN | | 3.495 | 71.736 |
| 36 | 1 | 4.930 | 89.675 |
| 36 | 2 | 7.474 | 121.475 |
| 36 | 3 | 1.159 | 42.537 |
| MEAN | | 4.521 | 84.562 |
| 16 | 1 | 3.581 | 72.811 |
| 16 | 2 | 4.269 | 91.413 |
| 16 | 3 | 6.299 | 106.793 |
| MEAN | | 4.716 | 87.006 |
| MEAN | | 6.166 | 105.119 |
| STD ERROR | | 1.727 | 21.588 |

Table 3. (Continued).

FIELD 32

| PLOT | CORE | 0-10 CM G/MSQ/CM DEPTH | TOTAL G/MSQ |
|---|---|---|---|
| 56 | 1 | 1.517 | 47.007 |
| 56 | 2 | 13.036 | 190.996 |
| 56 | 3 | 1.376 | 45.253 |
| MEAN | | 5.309 | 94.419 |
| 16 | 1 | 3.083 | 66.587 |
| 16 | 2 | 1.510 | 46.922 |
| 16 | 3 | 2.850 | 63.672 |
| MEAN | | 2.481 | 59.060 |
| 26 | 1 | 2.472 | 58.947 |
| 26 | 2 | 5.353 | 94.966 |
| 26 | 3 | 16.087 | 229.136 |
| MEAN | | 7.971 | 127.683 |
| 36 | 1 | 2.777 | 62.767 |
| 36 | 2 | 35.633 | 473.456 |
| 36 | 3 | 3.936 | 77.254 |
| MEAN | | 14.115 | 204.492 |
| 46 | 1 | 2.322 | 57.080 |
| 46 | 2 | 11.243 | 168.587 |
| 46 | 3 | 2.490 | 59.174 |
| MEAN | | 5.352 | 94.947 |
| MEAN | | 7.046 | 116.120 |
| STD ERROR | | 1.969 | 24.615 |

FIELD 33

| PLOT | CORE | 0-10 CM G/MSQ/CM DEPTH | TOTAL G/MSQ |
|---|---|---|---|
| 56 | 1 | 3.250 | 68.680 |
| 56 | 2 | 2.343 | 57.334 |
| 56 | 3 | 10.985 | 165.361 |
| MEAN | | 5.526 | 97.125 |
| 36 | 1 | 11.087 | 166.635 |
| 36 | 2 | 3.524 | 72.104 |
| 36 | 3 | 6.044 | 103.595 |
| MEAN | | 6.885 | 114.111 |
| 26 | 1 | .948 | 39.905 |
| 26 | 2 | 3.676 | 74.000 |
| 26 | 3 | 35.547 | 472.381 |
| MEAN | | 13.390 | 195.429 |
| 46 | 1 | 1.763 | 50.091 |
| 46 | 2 | 10.607 | 160.636 |
| 46 | 3 | 1.641 | 48.563 |
| MEAN | | 4.670 | 86.430 |
| 16 | 1 | 1.390 | 45.423 |
| 16 | 2 | .749 | 37.415 |
| 16 | 3 | 2.085 | 54.109 |
| MEAN | | 1.408 | 45.649 |
| MEAN | | 6.376 | 107.749 |
| STD ERROR | | 1.972 | 24.650 |

FIELD 41

| PLOT | CORE | 0-10 CM G/MSQ/CM DEPTH | TOTAL G/MSQ |
|---|---|---|---|
| 56 | 1 | 1.584 | 47.856 |
| 56 | 2 | 1.566 | 47.630 |
| 56 | 3 | 2.470 | 58.919 |
| MEAN | | 1.873 | 51.468 |
| 26 | 1 | 16.592 | 235.446 |
| 26 | 2 | 2.599 | 60.532 |
| 26 | 3 | 2.884 | 64.097 |
| MEAN | | 7.358 | 120.025 |
| 16 | 1 | 10.822 | 163.324 |
| 16 | 2 | 2.012 | 53.203 |
| 16 | 3 | 9.328 | 144.650 |
| MEAN | | 7.387 | 120.393 |
| 36 | 1 | 2.877 | 64.012 |
| 36 | 2 | 18.072 | 253.950 |
| 36 | 3 | 2.716 | 62.003 |
| MEAN | | 7.888 | 126.655 |
| 46 | 1 | 1.666 | 48.874 |
| 46 | 2 | 3.626 | 73.377 |
| 46 | 3 | .586 | 35.378 |
| MEAN | | 1.959 | 52.543 |
| MEAN | | 5.293 | 94.217 |
| STD ERROR | | 1.382 | 17.274 |

FIELD 51

| PLOT | CORE | 0-10 CM G/MSQ/CM DEPTH | TOTAL G/MSQ |
|---|---|---|---|
| 36 | 1 | 7.671 | 123.939 |
| 36 | 2 | 3.733 | 74.707 |
| 36 | 3 | 4.185 | 80.366 |
| MEAN | | 5.196 | 93.004 |
| 16 | 1 | 2.121 | 54.562 |
| 16 | 2 | 2.931 | 64.691 |
| 16 | 3 | .858 | 38.773 |
| MEAN | | 1.970 | 52.675 |
| 26 | 1 | 7.669 | 123.911 |
| 26 | 2 | .643 | 36.086 |
| 26 | 3 | 2.956 | 65.002 |
| MEAN | | 3.756 | 74.999 |
| 46 | 1 | 3.502 | 71.821 |
| 46 | 2 | 6.304 | 106.849 |
| 46 | 3 | 3.493 | 71.708 |
| MEAN | | 4.433 | 83.459 |
| 56 | 1 | 3.791 | 75.443 |
| 56 | 2 | 4.554 | 84.978 |
| 56 | 3 | 1.421 | 45.819 |
| MEAN | | 3.256 | 68.746 |
| MEAN | | 3.722 | 74.577 |
| STD ERROR | | .546 | 6.828 |

Table 3. (Continued).

FIELD 52

| PLOT | CORE | 0-10 CM G/MSQ/CM DEPTH | TOTAL G/MSQ |
|---|---|---|---|
| 36 | 1 | 3.468 | 71.397 |
| 36 | 2 | 18.719 | 262.043 |
| 36 | 3 | 11.166 | 167.625 |
| MEAN | | 11.118 | 167.021 |
| 16 | 1 | 20.542 | 284.819 |
| 16 | 2 | 1.732 | 49.695 |
| 16 | 3 | 11.005 | 165.616 |
| MEAN | | 11.093 | 166.710 |
| 26 | 1 | 1.510 | 46.922 |
| 26 | 2 | 21.252 | 293.704 |
| 26 | 3 | .668 | 36.397 |
| MEAN | | 7.810 | 125.674 |
| 46 | 1 | 2.986 | 65.370 |
| 46 | 2 | 2.866 | 63.870 |
| 46 | 3 | 21.110 | 291.921 |
| MEAN | | 8.987 | 140.387 |
| 56 | 1 | 15.095 | 216.744 |
| 56 | 2 | 3.373 | 70.208 |
| 56 | 3 | 19.910 | 276.925 |
| MEAN | | 12.793 | 187.959 |
| MEAN | | 10.360 | 157.550 |
| STD ERROR | | .878 | 10.975 |

FIELD 53

| PLOT | CORE | 0-10 CM G/MSQ/CM DEPTH | TOTAL G/MSQ |
|---|---|---|---|
| 16 | 1 | 4.317 | 82.007 |
| 16 | 2 | 2.934 | 64.719 |
| 16 | 3 | 3.379 | 70.293 |
| MEAN | | 3.543 | 72.340 |
| 56 | 1 | .455 | 33.737 |
| 56 | 2 | 2.155 | 54.986 |
| 56 | 3 | 1.992 | 52.949 |
| MEAN | | 1.534 | 47.224 |
| 46 | 1 | 1.840 | 51.053 |
| 46 | 2 | 4.959 | 90.042 |
| 46 | 3 | 1.996 | 53.005 |
| MEAN | | 2.932 | 64.700 |
| 26 | 1 | 5.002 | 90.580 |
| 26 | 2 | 2.515 | 59.485 |
| 26 | 3 | 4.400 | 83.054 |
| MEAN | | 3.972 | 77.706 |
| 36 | 1 | 3.008 | 65.653 |
| 36 | 2 | 32.156 | 429.997 |
| 36 | 3 | 1.797 | 50.516 |
| MEAN | | 12.320 | 182.055 |
| MEAN | | 4.860 | 88.805 |
| STD ERROR | | 1.910 | 23.875 |

FIELD 71

| PLOT | CORE | 0-10 CM G/MSQ/CM DEPTH | TOTAL G/MSQ |
|---|---|---|---|
| 16 | 1 | 1.942 | 52.326 |
| 16 | 2 | 12.993 | 190.458 |
| 16 | 3 | 21.992 | 302.956 |
| MEAN | | 12.309 | 181.914 |
| 26 | 1 | 7.474 | 121.475 |
| 26 | 2 | 25.481 | 346.557 |
| 26 | 3 | 7.438 | 121.025 |
| MEAN | | 13.464 | 196.352 |
| 56 | 1 | 7.488 | 121.647 |
| 56 | 2 | 2.479 | 59.032 |
| 56 | 3 | 10.444 | 158.599 |
| MEAN | | 6.803 | 113.093 |
| 46 | 1 | 9.274 | 143.971 |
| 46 | 2 | 2.517 | 59.513 |
| 46 | 3 | 1.535 | 47.233 |
| MEAN | | 4.442 | 83.573 |
| 36 | 1 | 3.196 | 68.001 |
| 36 | 2 | 21.284 | 294.100 |
| 36 | 3 | 20.596 | 285.498 |
| MEAN | | 15.025 | 215.867 |
| MEAN | | 10.409 | 158.160 |
| STD ERROR | | 2.035 | 25.443 |

FIELD 72

| PLOT | CORE | 0-10 CM G/MSQ/CM DEPTH | TOTAL G/MSQ |
|---|---|---|---|
| 56 | 1 | 16.802 | 238.077 |
| 56 | 2 | 17.961 | 252.564 |
| 56 | 3 | 1.958 | 52.524 |
| MEAN | | 12.240 | 181.055 |
| 16 | 1 | 1.944 | 52.355 |
| 16 | 2 | 9.919 | 152.035 |
| 16 | 3 | 6.333 | 107.217 |
| MEAN | | 6.066 | 103.869 |
| 46 | 1 | .740 | 37.302 |
| 46 | 2 | 2.291 | 56.684 |
| 46 | 3 | 6.825 | 113.357 |
| MEAN | | 3.285 | 69.114 |
| 36 | 1 | 3.189 | 67.916 |
| 36 | 2 | 8.543 | 134.832 |
| 36 | 3 | 12.105 | 179.367 |
| MEAN | | 7.946 | 127.372 |
| 26 | 1 | 21.246 | 293.619 |
| 26 | 2 | 10.867 | 163.890 |
| 26 | 3 | 23.480 | 321.545 |
| MEAN | | 18.531 | 259.685 |
| MEAN | | 9.614 | 148.219 |
| STD ERROR | | 2.663 | 33.288 |

Table 3. (Continued).

FIELD 73

| PLOT | CORE | 0-10 CM G/MSQ/CM DEPTH | TOTAL G/MSQ |
|---|---|---|---|
| 46 | 1 | 12.490 | 184.177 |
| 46 | 2 | 10.295 | 156.732 |
| 46 | 3 | 2.642 | 61.069 |
| MEAN | | 8.475 | 133.993 |
| 36 | 1 | .489 | 34.162 |
| 36 | 2 | 30.868 | 413.897 |
| 36 | 3 | 28.025 | 378.360 |
| MEAN | | 19.794 | 275.473 |
| 26 | 1 | 13.697 | 199.258 |
| 26 | 2 | 2.535 | 59.739 |
| 26 | 3 | 1.397 | 45.507 |
| MEAN | | 5.876 | 101.502 |
| 16 | 1 | 2.626 | 60.871 |
| 16 | 2 | 18.144 | 254.856 |
| 16 | 3 | 10.274 | 156.477 |
| MEAN | | 10.348 | 157.401 |
| 56 | 1 | 3.735 | 74.735 |
| 56 | 2 | 4.663 | 86.336 |
| 56 | 3 | 1.551 | 47.431 |
| MEAN | | 3.316 | 69.501 |
| MEAN | | 9.562 | 147.574 |
| STD ERROR | | 2.820 | 35.254 |

FIELD 74

| PLOT | CORE | 0-10 CM G/MSQ/CM DEPTH | TOTAL G/MSQ |
|---|---|---|---|
| 36 | 1 | 3.336 | 69.756 |
| 36 | 2 | 3.504 | 71.849 |
| 36 | 3 | 16.094 | 229.221 |
| MEAN | | 7.645 | 123.609 |
| 46 | 1 | 12.583 | 185.337 |
| 46 | 2 | 24.141 | 329.807 |
| 46 | 3 | 1.107 | 41.886 |
| MEAN | | 12.610 | 185.677 |
| 56 | 1 | 4.968 | 90.156 |
| 56 | 2 | 19.172 | 267.701 |
| 56 | 3 | 1.881 | 51.562 |
| MEAN | | 8.674 | 136.473 |
| 26 | 1 | 3.527 | 72.132 |
| 26 | 2 | 17.420 | 245.802 |
| 26 | 3 | 2.239 | 56.033 |
| MEAN | | 7.728 | 124.656 |
| 16 | 1 | 2.350 | 57.419 |
| 16 | 2 | 10.288 | 156.647 |
| 16 | 3 | 2.716 | 62.003 |
| MEAN | | 5.118 | 92.023 |
| MEAN | | 8.355 | 132.487 |
| STD ERROR | | 1.216 | 15.203 |

FIELD 75

| PLOT | CORE | 0-10 CM G/MSQ/CM DEPTH | TOTAL G/MSQ |
|---|---|---|---|
| 16 | 1 | 17.744 | 249.848 |
| 16 | 2 | 5.045 | 91.118 |
| 16 | 3 | 1.650 | 48.676 |
| MEAN | | 8.146 | 129.881 |
| 46 | 1 | 2.098 | 54.279 |
| 46 | 2 | .532 | 34.699 |
| 46 | 3 | 3.001 | 65.568 |
| MEAN | | 1.877 | 51.515 |
| 36 | 1 | 3.932 | 77.197 |
| 36 | 2 | 19.568 | 272.653 |
| 36 | 3 | 2.082 | 54.081 |
| MEAN | | 8.527 | 134.643 |
| 26 | 1 | .367 | 32.634 |
| 26 | 2 | 14.471 | 208.934 |
| 26 | 3 | 2.420 | 58.296 |
| MEAN | | 5.752 | 99.955 |
| 56 | 1 | 6.983 | 115.337 |
| 56 | 2 | 3.674 | 73.971 |
| 56 | 3 | 1.308 | 44.404 |
| MEAN | | 3.988 | 77.904 |
| MEAN | | 5.658 | 98.780 |
| STD ERROR | | 1.255 | 15.692 |

FIELD 76

| PLOT | CORE | 0-10 CM G/MSQ/CM DEPTH | TOTAL G/MSQ |
|---|---|---|---|
| 16 | 1 | 2.655 | 61.239 |
| 16 | 2 | 36.599 | 485.538 |
| 16 | 3 | 4.131 | 79.687 |
| MEAN | | 14.462 | 208.821 |
| 26 | 1 | 3.970 | 77.678 |
| 26 | 2 | 4.504 | 84.355 |
| 26 | 3 | 7.440 | 121.053 |
| MEAN | | 5.305 | 94.362 |
| 56 | 1 | 2.974 | 65.229 |
| 56 | 2 | 3.133 | 67.209 |
| 56 | 3 | 3.597 | 73.009 |
| MEAN | | 3.235 | 68.482 |
| 36 | 1 | 1.863 | 51.336 |
| 36 | 2 | 3.778 | 75.273 |
| 36 | 3 | 1.399 | 45.536 |
| MEAN | | 2.347 | 57.382 |
| 46 | 1 | 4.735 | 87.241 |
| 46 | 2 | .469 | 33.907 |
| 46 | 3 | 2.800 | 63.050 |
| MEAN | | 2.668 | 61.399 |
| MEAN | | 5.603 | 98.089 |
| STD ERROR | | 2.274 | 28.421 |

Table 3. (Continued).

FIELD 77

| PLOT | CORE | 0-10 CM G/MSQ/CM DEPTH | TOTAL G/MSQ |
|---|---|---|---|
| 46 | 1 | .967 | 40.132 |
| 46 | 2 | 17.196 | 243.001 |
| 46 | 3 | 2.069 | 53.911 |
| MEAN | | 6.744 | 112.348 |
| 36 | 1 | 1.401 | 45.564 |
| 36 | 2 | 17.576 | 247.754 |
| 36 | 3 | 7.698 | 124.278 |
| MEAN | | 8.892 | 139.199 |
| 56 | 1 | 3.961 | 77.565 |
| 56 | 2 | 20.055 | 278.736 |
| 56 | 3 | .600 | 35.548 |
| MEAN | | 8.205 | 130.616 |
| 26 | 1 | 8.289 | 131.663 |
| 26 | 2 | .853 | 38.717 |
| 26 | 3 | .699 | 36.793 |
| MEAN | | 3.281 | 69.058 |
| 16 | 1 | 9.923 | 152.092 |
| 16 | 2 | .251 | 31.191 |
| 16 | 3 | .367 | 32.634 |
| MEAN | | 3.514 | 71.972 |
| MEAN | | 6.127 | 104.638 |
| STD ERROR | | 1.168 | 14.598 |

FIELD 81

| PLOT | CORE | 0-10 CM G/MSQ/CM DEPTH | TOTAL G/MSQ |
|---|---|---|---|
| 26 | 1 | 2.377 | 57.759 |
| 26 | 2 | 11.764 | 175.095 |
| 26 | 3 | 8.635 | 135.992 |
| MEAN | | 7.592 | 122.949 |
| 36 | 1 | 3.850 | 76.178 |
| 36 | 2 | 13.042 | 191.081 |
| 36 | 3 | 1.917 | 52.015 |
| MEAN | | 6.270 | 106.425 |
| 16 | 1 | 1.304 | 44.347 |
| 16 | 2 | 2.958 | 65.030 |
| 16 | 3 | 15.166 | 217.621 |
| MEAN | | 6.476 | 109.000 |
| 56 | 1 | 8.411 | 133.191 |
| 56 | 2 | 16.816 | 238.247 |
| 56 | 3 | 2.039 | 53.543 |
| MEAN | | 9.089 | 141.660 |
| 46 | 1 | 1.627 | 48.393 |
| 46 | 2 | 1.182 | 42.820 |
| 46 | 3 | 2.816 | 63.248 |
| MEAN | | 1.875 | 51.487 |
| MEAN | | 6.260 | 106.304 |
| STD ERROR | | 1.205 | 15.065 |

FIELD 82

| PLOT | CORE | 0-10 CM G/MSQ/CM DEPTH | TOTAL G/MSQ |
|---|---|---|---|
| 16 | 1 | 2.291 | 56.684 |
| 16 | 2 | .453 | 33.709 |
| 16 | 3 | .860 | 38.802 |
| MEAN | | 1.201 | 43.065 |
| 36 | 1 | 5.202 | 93.070 |
| 36 | 2 | 3.853 | 76.207 |
| 36 | 3 | 6.037 | 103.510 |
| MEAN | | 5.030 | 90.929 |
| 26 | 1 | 1.218 | 43.272 |
| 26 | 2 | 5.817 | 100.766 |
| 26 | 3 | 1.949 | 52.411 |
| MEAN | | 2.995 | 65.483 |
| 56 | 1 | 22.982 | 315.320 |
| 56 | 2 | 2.657 | 61.267 |
| 56 | 3 | 1.609 | 48.167 |
| MEAN | | 9.083 | 141.585 |
| 46 | 1 | .885 | 39.113 |
| 46 | 2 | 8.334 | 132.229 |
| 46 | 3 | 1.268 | 43.895 |
| MEAN | | 3.496 | 71.746 |
| MEAN | | 4.361 | 82.562 |
| STD ERROR | | 1.329 | 16.617 |

FIELD 83

| PLOT | CORE | 0-10 CM G/MSQ/CM DEPTH | TOTAL G/MSQ |
|---|---|---|---|
| 36 | 1 | 1.523 | 47.092 |
| 36 | 2 | 11.811 | 175.689 |
| 36 | 3 | 1.906 | 51.874 |
| MEAN | | 5.080 | 91.551 |
| 26 | 1 | .894 | 39.226 |
| 26 | 2 | .688 | 36.651 |
| 26 | 3 | 2.232 | 55.948 |
| MEAN | | 1.271 | 43.942 |
| 56 | 1 | 1.607 | 48.139 |
| 56 | 2 | 1.175 | 42.735 |
| 56 | 3 | 24.553 | 334.957 |
| MEAN | | 9.111 | 141.943 |
| 16 | 1 | 3.029 | 65.908 |
| 16 | 2 | .690 | 36.680 |
| 16 | 3 | 5.319 | 94.541 |
| MEAN | | 3.013 | 65.710 |
| 46 | 1 | 10.252 | 156.194 |
| 46 | 2 | 2.302 | 56.825 |
| 46 | 3 | 10.150 | 154.921 |
| MEAN | | 7.568 | 122.647 |
| MEAN | | 5.209 | 93.159 |
| STD ERROR | | 1.434 | 17.927 |

Table 3. (Continued).

FIELD 84

| PLOT | CORE | 0-10 CM G/MSQ/CM DEPTH | TOTAL G/MSQ |
|---|---|---|---|
| 46 | 1 | 3.094 | 66.728 |
| 46 | 2 | 11.225 | 168.361 |
| 46 | 3 | 13.226 | 193.373 |
| MEAN | | 9.182 | 142.820 |
| 16 | 1 | 1.426 | 45.875 |
| 16 | 2 | 25.499 | 346.784 |
| 16 | 3 | 6.480 | 109.056 |
| MEAN | | 11.135 | 167.238 |
| 36 | 1 | .638 | 36.029 |
| 36 | 2 | 15.983 | 227.835 |
| 36 | 3 | 1.082 | 41.575 |
| MEAN | | 5.901 | 101.813 |
| 26 | 1 | 2.671 | 61.437 |
| 26 | 2 | .788 | 37.896 |
| 26 | 3 | 2.897 | 64.267 |
| MEAN | | 2.119 | 54.533 |
| 56 | 1 | 1.071 | 41.433 |
| 56 | 2 | 9.414 | 145.725 |
| 56 | 3 | 18.063 | 253.837 |
| MEAN | | 9.516 | 146.999 |
| MEAN | | 7.570 | 122.681 |
| STD ERROR | | 1.606 | 20.077 |

FIELD 85

| PLOT | CORE | 0-10 CM G/MSQ/CM DEPTH | TOTAL G/MSQ |
|---|---|---|---|
| 16 | 1 | 5.150 | 92.419 |
| 16 | 2 | 1.299 | 44.291 |
| 16 | 3 | 36.846 | 488.622 |
| MEAN | | 14.432 | 208.444 |
| 56 | 1 | 1.675 | 48.988 |
| 56 | 2 | 8.787 | 137.888 |
| 56 | 3 | .398 | 33.030 |
| MEAN | | 3.620 | 73.302 |
| 26 | 1 | 1.098 | 41.773 |
| 26 | 2 | 2.116 | 54.505 |
| 26 | 3 | 7.864 | 126.344 |
| MEAN | | 3.693 | 74.207 |
| 36 | 1 | 62.917 | 814.514 |
| 36 | 2 | 2.073 | 53.967 |
| 36 | 3 | .982 | 40.330 |
| MEAN | | 21.991 | 302.937 |
| 46 | 1 | 3.364 | 70.095 |
| 46 | 2 | 1.279 | 44.036 |
| 46 | 3 | 1.944 | 52.355 |
| MEAN | | 2.196 | 55.495 |
| MEAN | | 9.186 | 142.877 |
| STD ERROR | | 3.883 | 48.534 |

FIELD 86

| PLOT | CORE | 0-10 CM G/MSQ/CM DEPTH | TOTAL G/MSQ |
|---|---|---|---|
| 36 | 1 | 9.785 | 150.366 |
| 36 | 2 | 1.711 | 49.440 |
| 36 | 3 | 2.934 | 64.719 |
| MEAN | | 4.810 | 88.175 |
| 16 | 1 | 2.605 | 60.617 |
| 16 | 2 | 22.232 | 305.955 |
| 16 | 3 | 14.853 | 213.716 |
| MEAN | | 13.230 | 193.429 |
| 46 | 1 | .045 | 28.616 |
| 46 | 2 | 18.346 | 257.374 |
| 46 | 3 | 1.562 | 47.573 |
| MEAN | | 6.651 | 111.188 |
| 56 | 1 | 8.873 | 138.963 |
| 56 | 2 | 1.240 | 43.555 |
| 56 | 3 | 1.933 | 52.213 |
| MEAN | | 4.016 | 78.244 |
| 26 | 1 | 3.384 | 70.350 |
| 26 | 2 | 1.607 | 48.139 |
| 26 | 3 | 34.166 | 455.122 |
| MEAN | | 13.052 | 191.203 |
| MEAN | | 8.352 | 132.448 |
| STD ERROR | | 2.002 | 25.021 |

The soil sample analysis results for wheat are given in Table 4. The blue grama soil sample analysis is given in Table 5. Plant sample analysis has not been completed at this time.

## FUTURE ANALYSIS

The plant samples taken during the 1970 field season will be analyzed for the above-mentioned nutrients. Comparisons of the plant nutrients to soil nutrients will be made using canonical correlation.

Table 4. Results of soil sample analysis for wheat soil samples.

| Sample No. | pH | Cond. (Salts) | Lime | % O.M. | P ppm | K ppm | $NO_3$-N ppm | Zn ppm | Fe ppm | Cu ppm | Mn ppm |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Field 11 | | | | | | | | | | | |
| 111 | 7.5 | 0.4 | Low | 0.8 | 7.0 | 360 | 0.2 | 0.21 | 3.8 | 0.30 | 6.2 |
| 112 | 7.8 | 0.4 | Low | 1.1 | 8.8 | 468 | 0.2 | 0.43 | 3.9 | 0.36 | 9.0 |
| 113 | 7.8 | 0.4 | Low | 1.0 | 5.5 | 500+ | 1.3 | 0.36 | 3.6 | 0.34 | 8.6 |
| | 7.5* | 0.4* | Low* | 1.1* | 3.3* | 498* | 1.8* | 0.24* | 3.6* | 0.36* | 7.2* |
| Field 21 | | | | | | | | | | | |
| 211 | 7.3 | 0.3 | Low | 0.6 | 7.5 | 365 | 0.2 | 0.28 | 6.0 | 0.54 | 11.2 |
| 212 | 7.8 | 0.3 | High | 1.0 | 4.3 | 370 | 0.2 | 0.20 | 4.0 | 0.54 | 6.2 |
| 213 | 7.7 | 0.3 | High | 0.6 | 1.5 | 235 | 0.7 | 0.24 | 4.2 | 0.54 | 4.4 |
| Field 22 | | | | | | | | | | | |
| 221 | 6.2 | 0.2 | Low | 0.5 | 16.5 | 413 | 0.2 | 0.52 | 25.2 | 0.74 | 25.3 |
| 222 | 6.3 | 0.2 | Low | 0.6 | 9.0 | 280 | 0.0 | 0.42 | 16.0 | 0.64 | 18.2 |
| 223 | 6.3 | 0.2 | Low | 0.6 | 12.8 | 340 | 0.0 | 0.28 | 16.4 | 0.70 | 23.6 |
| Field 31 | | | | | | | | | | | |
| 311 | 7.6 | 0.3 | Med | 1.2 | 6.0 | 500 | 0.3 | 0.26 | 6.6 | 0.78 | 7.2 |
| 312 | 7.7 | 0.3 | Med | 0.9 | 5.5 | 330 | 0.2 | 0.26 | 5.0 | 0.54 | 6.0 |
| 313 | 7.8 | 0.3 | High | 1.1 | 4.8 | 285 | 0.7 | 0.20 | 4.6 | 0.58 | 6.2 |
| | 7.8* | 0.3* | High* | 1.0* | 4.5* | 230* | 0.7* | 0.28* | 4.6* | 0.60* | 6.0* |
| Field 32 | | | | | | | | | | | |
| 321 | 7.4 | 0.2 | Low | 1.0 | 13.8 | 500+ | 0.3 | 0.36 | 6.8 | 0.74 | 10.6 |
| 322 | 7.4 | 0.3 | Low | 0.9 | 13.8 | 500+ | 0.4 | 0.88 | 7.6 | 3.30 | 16.0 |
| 323 | 7.7 | 0.3 | Med | 1.0 | 9.5 | 325 | 0.0 | 0.30 | 5.0 | 0.60 | 7.2 |
| Field 33 | | | | | | | | | | | |
| 331 | 7.8 | 0.3 | Med | 0.9 | 5.3 | 300 | 0.5 | 0.26 | 4.8 | 0.58 | 5.4 |
| 332 | 8.0 | 0.3 | High | 0.9 | 4.0 | 185 | 0.0 | 0.20 | 4.6 | 0.54 | 4.8 |
| 333 | 8.0 | 0.2 | High | 1.0 | 4.0 | 168 | 0.3 | 0.20 | 4.4 | 0.54 | 4.2 |

Table 4. (Continued).

| Sample No. | pH | Cond. (Salts) | Lime | % O.M. | P ppm | K ppm | $NO_3$-N ppm | Zn ppm | Fe ppm | Cu ppm | Mn ppm |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Field 41 | | | | | | | | | | | |
| 411 | 7.5 | 0.3 | Low | 0.9 | 8.3 | 305 | 0.8 | 0.32 | 5.8 | 0.66 | 8.0 |
| 412 | 7.5 | 0.3 | Low | 1.1 | 8.3 | 340 | 0.8 | 0.34 | 6.0 | 0.78 | 7.2 |
| 413 | 7.8 | 0.3 | Med | 1.0 | 6.5 | 320 | 0.5 | 0.32 | 5.8 | 0.74 | 6.8 |
| Field 51 | | | | | | | | | | | |
| 511 | 7.6 | 0.2 | Low | 0.5 | 13.0 | 375 | 0.0 | 0.30 | 5.4 | 0.40 | 8.0 |
| 512 | 7.5 | 0.2 | Low | 0.6 | 8.5 | 320 | 0.2 | 0.48 | 5.8 | 1.50 | 7.4 |
| 513 | 7.6 | 0.2 | Low | 0.5 | 11.3 | 290 | 0.0 | 0.26 | 4.6 | 0.60 | 6.0 |
| | 7.5* | 0.3* | Low* | 0.6* | 9.5* | 215* | 0.8* | 0.28* | 5.0* | 0.52* | 6.2* |
| Field 52 | | | | | | | | | | | |
| 521 | 7.8 | 0.2 | Low | 0.8 | 9.0 | 335 | 0.3 | 0.46 | 4.6 | 0.40 | 6.4 |
| 522 | 7.8 | 0.2 | Low | 0.9 | 7.5 | 370 | 0.0 | 0.28 | 5.0 | 0.40 | 6.2 |
| 523 | 7.9 | 0.2 | Low | 1.1 | 5.5 | 290 | 0.4 | 0.34 | 6.2 | 0.70 | 5.6 |
| Field 53 | | | | | | | | | | | |
| 531 | 7.8 | 0.2 | Low | 0.9 | 12.5 | 413 | 1.3 | 0.34 | 7.4 | 0.46 | 7.8 |
| 532 | 7.9 | 0.2 | Med | 0.9 | 10.0 | 408 | 0.0 | 0.42 | 5.8 | 0.46 | 9.4 |
| 533 | 8.2 | 0.2 | Low | 0.7 | 12.3 | 445 | 0.4 | 0.34 | 5.2 | 0.48 | 7.6 |
| Field 71 | | | | | | | | | | | |
| 711 | 7.9 | 0.2 | Low | 0.6 | 10.3 | 258 | 0.2 | 0.30 | 5.2 | 0.66 | 7.2 |
| 712 | 7.9 | 0.3 | Med | 0.7 | 5.5 | 225 | 1.5 | 0.20 | 5.2 | 0.52 | 5.2 |
| 713 | 7.9 | 0.3 | Med | 0.6 | 15.0 | 413 | 0.7 | 0.30 | 4.6 | 0.52 | 6.0 |
| | 7.7* | 0.3* | Low* | 0.6* | 14.0* | 325* | 1.1* | 0.28* | 4.8* | 0.54* | 6.0* |

Table 4. (Continued).

| Sample No. | pH | Cond. (Salts) | Lime | % O.M. | P ppm | K ppm | $NO_3$-N ppm | Zn ppm | Fe ppm | Cu ppm | Mn ppm |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Field 72 | | | | | | | | | | | |
| 721 | 7.9 | 0.3 | Med | 1.2 | 6.8 | 300 | 0.5 | 0.60 | 6.4 | 0.84 | 6.6 |
| 722 | 7.8 | 0.3 | Low | 1.1 | 9.0 | 390 | 0.2 | 0.60 | 5.8 | 1.26 | 7.2 |
| 723 | 7.0 | 0.3 | Low | 0.9 | 12.0 | 185 | 0.3 | 0.48 | 11.2 | 0.60 | 12.4 |
| Field 73 | | | | | | | | | | | |
| 731 | 6.8 | 0.2 | Low | 1.2 | 13.0 | 455 | 1.3 | 0.54 | 12.2 | 0.98 | 14.6 |
| 732 | 6.8 | 0.2 | Low | 1.0 | 10.5 | 418 | 0.0 | 0.42 | 13.8 | 0.98 | 16.6 |
| 733 | 7.0 | 0.2 | Low | 1.1 | 12.0 | 455 | 0.0 | 0.52 | 8.6 | 0.96 | 12.2 |
| Field 74 | | | | | | | | | | | |
| 741 | 7.7 | 0.3 | Low | 0.9 | 16.5 | 478 | 0.0 | 0.54 | 5.2 | 0.42 | 9.0 |
| 742 | 7.2 | 0.3 | Low | 0.9 | 17.0 | 455 | 0.0 | 0.40 | 9.4 | 0.48 | 15.6 |
| 743 | 7.5 | 0.3 | Low | 0.8 | 12.5 | 350 | 0.8 | 0.42 | 6.2 | 0.54 | 7.4 |
| | 7.5* | 0.2* | Low* | 0.8* | 11.0* | 258* | 1.0* | 0.30* | 6.4* | 0.52* | 7.8* |
| Field 75 | | | | | | | | | | | |
| 751 | 6.3 | 0.2 | Low | 1.7 | 14.0 | 370 | 0.5 | 0.48 | 14.2 | 0.54 | 14.6 |
| 752 | 7.4 | 0.2 | Med | 1.0 | 5.0 | 300 | 0.8 | 0.42 | 6.2 | 0.60 | 7.2 |
| 753 | 6.7 | 0.2 | Low | 0.7 | 11.3 | 315 | 0.8 | 0.42 | 11.4 | 0.60 | 12.6 |
| Field 76 | | | | | | | | | | | |
| 761 | 7.7 | 0.3 | Low | 1.0 | 6.5 | 230 | 0.8 | 0.32 | 4.0 | 0.34 | 5.0 |
| 762 | 7.8 | 0.3 | Med | 1.5 | 7.5 | 340 | 0.8 | 0.28 | 3.8 | 0.50 | 6.2 |
| 763 | 7.7 | 0.3 | Med | 1.1 | 5.5 | 300 | 1.5 | 0.24 | 5.8 | 0.66 | 5.8 |
| Field 77 | | | | | | | | | | | |
| 771 | 7.2 | 0.2 | Low | 1.2 | 7.5 | 285 | 2.6 | 0.34 | 6.8 | 0.66 | 9.6 |
| 772 | 7.5 | 0.3 | Low | 1.0 | 14.5 | 360 | 1.4 | 0.40 | 5.2 | 0.56 | 8.0 |
| 773 | 7.4 | 0.3 | Low | 1.1 | 14.3 | 395 | 1.3 | 0.38 | 5.6 | 0.58 | 7.8 |
| | 7.4* | 0.3* | Low* | 1.1* | 13.5* | 390* | 1.4* | 0.46* | 5.6* | 0.64* | 7.4* |

Table 4. (Continued).

| Sample No. | pH | Cond. (Salts) | Lime | % O.M. | P ppm | K ppm | $NO_3$-N ppm | Zn ppm | Fe ppm | Cu ppm | Mn ppm |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Field 81 | | | | | | | | | | | |
| 811 | 6.9 | 0.2 | Low | 1.0 | 13.0 | 380 | 0.8 | 0.36 | 7.8 | 0.54 | 10.8 |
| 812 | 7.2 | 0.3 | Low | 0.7 | 7.3 | 270 | 0.3 | 0.26 | 6.8 | 0.66 | 8.4 |
| 813 | 7.1 | 0.3 | Low | 1.0 | 7.0 | 280 | 0.3 | 0.28 | 7.0 | 0.56 | 10.0 |
| Field 82 | | | | | | | | | | | |
| 821 | 7.5 | 0.4 | Low | 0.9 | 10.0 | 370 | 0.5 | 0.66 | 5.6 | 0.58 | 7.0 |
| 822 | 7.6 | 0.3 | Med | 1.0 | 6.5 | 325 | 0.8 | 0.32 | 5.6 | 0.58 | 7.4 |
| 823 | 7.5 | 0.3 | Med | 0.5 | 18.5 | 380 | 0.8 | 0.36 | 5.4 | 0.44 | 6.6 |
| Field 83 | | | | | | | | | | | |
| 831 | 7.7 | 0.3 | Med | 0.8 | 4.0 | 148 | 0.5 | 0.22 | 5.0 | 0.44 | 5.0 |
| 832 | 7.6 | 0.2 | Low | 1.0 | 4.0 | 245 | 0.5 | 0.30 | 6.0 | 0.64 | 6.4 |
| 833 | 7.3 | 0.2 | Low | 0.7 | 8.5 | 290 | 0.8 | 0.34 | 5.8 | 0.56 | 7.8 |
| | 7.3* | 0.2* | Low* | 0.7* | 7.5* | 295* | 0.5* | 0.28* | 5.8* | 0.56* | 7.4* |
| Field 84 | | | | | | | | | | | |
| 841 | 7.3 | 0.2 | Low | 0.6 | 7.0 | 245 | 0.8 | 0.24 | 6.0 | 0.56 | 7.0 |
| 842 | 7.2 | 0.2 | Low | 0.8 | 7.0 | 300 | 1.7 | 0.26 | 8.2 | 0.60 | 8.6 |
| 843 | 7.7 | 0.3 | High | 1.0 | 7.5 | 235 | 0.8 | 0.30 | 3.6 | 0.50 | 5.2 |
| Field 85 | | | | | | | | | | | |
| 851 | 7.9 | 0.3 | Low | 0.5 | 13.0 | 295 | 0.8 | 0.28 | 4.2 | 0.46 | 4.2 |
| 852 | 7.8 | 0.3 | Low | 0.6 | 11.5 | 345 | 1.1 | 0.32 | 4.2 | 0.44 | 6.0 |
| 853 | 7.7 | 0.3 | Low | 0.7 | 11.8 | 340 | 0.8 | 0.32 | 4.4 | 0.58 | 6.0 |
| Field 86 | | | | | | | | | | | |
| 861 | 7.7 | 0.3 | Low | 0.5 | 9.0 | 268 | 0.8 | 0.26 | 4.8 | 0.48 | 5.2 |
| 862 | 7.7 | 0.3 | Low | 0.6 | 18.5 | 355 | 0.5 | 0.30 | 5.0 | 0.48 | 6.4 |
| 863 | 7.7 | 0.3 | Low | 0.7 | 16.0 | 350 | 1.3 | 0.34 | 6.0 | 0.54 | 7.8 |
| | 7.6* | 0.3* | Low* | 0.9* | 14.5* | 330* | 1.3* | 0.34* | 6.0* | 0.56* | 8.4* |

Table 4. (Continued).

| Sample No. | % Sand | % Silt | % Clay | Texture | $SO_4$-S ppm | CEC meq/100 g |
|---|---|---|---|---|---|---|
| Field 11 | | | | | | |
| 111 | 60.8 | 23.6 | 15.6 | Sandy Loam | 4.50 | 11.12 |
| | | | | | 3.25* | 12.80* |
| 112 | 67.2 | 18.2 | 14.6 | Sandy loam | 1.25 | 12.32 |
| | | | | | 2.50* | |
| 113 | 65.2 | 19.6 | 15.2 | Sandy loam | 8.25 | 11.76 |
| | | | | | 6.00* | 12.48* |
| Field 21 | | | | | | |
| 211 | 63.6 | 20.0 | 16.4 | Sandy loam | 1.25 | 8.88 |
| 212 | 62.0 | 18.6 | 19.4 | Sandy loam | 14.50 | 11.28 |
| | | | | | 10.25* | |
| 213 | 58.0 | 13.6 | 28.4 | Sandy clay loam | 13.75 | 15.20 |
| | 63.6* | 9.0* | 27.4* | | 10.00* | |
| Field 22 | | | | | | |
| 221 | 57.0 | 26.2 | 16.8 | Sandy loam | 1.00 | 8.00 |
| | | | | | 0.50* | |
| 222 | 60.0 | 21.6 | 18.4 | Sandy loam | 2.00 | 8.16 |
| 223 | 56.0 | 23.6 | 20.4 | Sandy clay loam | 1.50 | 13.20 |
| Field 31 | | | | | | |
| 311 | 43.0 | 28.4 | 28.6 | Clay loam | 15.00 | 17.60 |
| | 46.6* | 24.0* | 29.4* | | | |
| 312 | 54.0 | 21.6 | 24.4 | Sandy clay loam | 16.50 | 13.20 |
| | | | | | 11.75* | 14.44* |
| 313 | 51.0 | 24.2 | 24.8 | Sandy clay loam | 16.50 | 13.20 |
| | | | | | 11.75* | 14.00* |

Table 4. (Continued).

| Sample No. | % Sand | % Silt | % Clay | Texture | $SO_4$-S ppm | CEC meq/100 g |
|---|---|---|---|---|---|---|
| Field 32 | | | | | | |
| 321 | 56.0 | 19.6 | 24.4 | Sandy clay loam | 2.50 | 13.20 |
| 322 | 48.0 | 24.1 | 27.6 | Sandy clay loam | 2.50 | 15.20 |
| | 52.6* | 19.8* | 27.6* | | | |
| 323 | 55.6 | 22.8 | 21.6 | Sandy clay loam | 7.00 | 12.00 |
| Field 33 | | | | | | |
| 331 | 57.0 | 20.8 | 22.2 | Sandy clay loam | 8.50 | 13.20 |
| | | | | | 11.75* | |
| 332 | 59.6 | 17.4 | 23.0 | Sandy clay loam | 13.0 | 11.28 |
| | | | | | 9.25* | |
| 333 | 55.6 | 19.6 | 24.8 | Sandy clay loam | 13.75 | 12.80 |
| | | | | | 9.75* | |
| Field 41 | | | | | | |
| 411 | 66.6 | 13.0 | 20.4 | Sandy clay loam | 2.50 | 11.20 |
| 412 | 56.6 | 18.0 | 25.4 | Sandy clay loam | 5.00 | 15.60 |
| 413 | 60.6 | 17.8 | 21.6 | Sandy clay loam | 5.50 | 12.08 |
| Field 51 | | | | | | |
| 511 | 71.2 | 9.8 | 19.0 | Sandy loam | 0.75 | 10.40 |
| | | | | | 1.00* | |
| 512 | 65.6 | 19.9 | 14.5 | Sandy loam | 2.50 | 11.76 |
| 513 | 75.4 | 7.0 | 17.6 | Sandy loam | 1.25 | 9.60 |
| | | | | | | 9.52* |
| Field 52 | | | | | | |
| 521 | 65.6 | 15.2 | 19.2 | Sandy loam | 7.75 | 10.0 |
| 522 | 65.6 | 15.2 | 19.2 | Sandy loam | 3.00 | 10.0 |
| 523 | 51.6 | 21.2 | 27.2 | Sandy clay loam | 8.50 | 15.4 |
| | 52.6* | 19.8* | 27.6* | | | |

Table 4. (Continued).

| Sample No. | % Sand | % Silt | % Clay | Texture | $SO_4$-S ppm | CEC meq/100 g |
|---|---|---|---|---|---|---|
| Field 53 | | | | | | |
| 531 | 64.6 | 14.2 | 21.2 | Sandy clay loam | 2.25 | 10.16 |
| 532 | 61.8 | 16.0 | 22.2 | Sandy clay loam | 5.25 | 10.00 |
| | | | | | | 10.80* |
| 533 | 67.8 | 13.0 | 19.2 | Sandy loam | 9.50 | 8.88 |
| Field 71 | | | | | | |
| 711 | 70.8 | 12.0 | 17.2 | Sandy loam | 2.50 | 8.00 |
| 712 | 63.8 | 13.0 | 23.2 | Sandy clay loam | 11.50 | 12.32 |
| 713 | 70.8 | 9.8 | 19.4 | Sandy loam | 11.00 | 9.28 |
| | | | | | | 10.08* |
| Field 72 | | | | | | |
| 721 | 54.8 | 20.8 | 24.4 | Sandy clay loam | 7.00 | 13.68 |
| 722 | 61.8 | 18.8 | 19.4 | Sandy loam | 8.75 | 10.24 |
| 723 | 64.8 | 18.0 | 17.2 | Sandy loam | 5.00 | 8.00 |
| Field 73 | | | | | | |
| 731 | 52.8 | 20.0 | 27.2 | Sandy clay loam | 2.00 | 13.20 |
| | | | | | | 13.60* |
| 732 | 53.2 | 20.4 | 26.4 | Sandy clay loam | 1.00 | 13.04 |
| 733 | 54.8 | 19.4 | 25.8 | Sandy clay loam | 0.50 | 12.72 |
| Field 74 | | | | | | |
| 741 | 66.8 | 16.0 | 17.2 | Sandy loam | 0.25 | 7.76 |
| 742 | 66.4 | 16.6 | 17.0 | Sandy loam | 0.25 | 8.32 |
| | 66.6* | 14.4* | 19.0* | | | |
| 743 | 64.4 | 17.8 | 17.8 | Sandy loam | 3.00 | 9.28 |
| | | | | | | 10.56* |

Table 4. (Continued).

| Sample No. | % Sand | % Silt | % Clay | Texture | $SO_4$-S ppm | CEC meq/100 g |
|---|---|---|---|---|---|---|
| Field 75 | | | | | | |
| 751 | 69.4 | 15.0 | 15.6 | Sandy loam | 0.25 | 7.44 |
| 752 | 60.4 | 18.4 | 21.2 | Sandy clay loam | 7.00 | 12.40 |
| 753 | 68.4 | 12.4 | 19.2 | Sandy loam | 0.50 | 10.00 |
| Field 76 | | | | | | |
| 761 | 66.4 | 14.4 | 19.2 | Sandy loam | 11.50 | 10.80 |
| 762 | 60.4 | 20.2 | 19.4 | Sandy loam | 5.75 | 10.80 |
| 763 | 61.4 | 15.8 | 22.8 | Sandy clay loam | 5.50 | 12.00 |
| Field 77 | | | | | | |
| 771 | 59.4 | 19.4 | 21.2 | Sandy clay loam | 2.00 | 10.40 |
| 772 | 69.4 | 14.4 | 16.2 | Sandy loam | 3.75 | 8.32 |
| 773 | 63.4 | 17.4 | 19.2 | Sandy loam | 0.75 | 11.60 |
| Field 81 | | | | | | |
| 811 | 68.8 | 12.6 | 18.6 | Sandy loam | 0.50 | 9.12<br>9.44* |
| 812 | 66.8 | 12.2 | 21.0 | Sandy clay loam | 1.00 | 10.40 |
| 813 | 68.8 | 13.0 | 18.2 | Sandy loam | 1.25 | 9.68 |
| Field 82 | | | | | | |
| 821 | 69.8 | 13.8 | 16.4 | Sandy loam | 2.75 | 8.32 |
| 822 | 66.8 | 15.8 | 17.4 | Sandy loam | 2.75 | 9.68 |
| 823 | 76.8 | 7.8 | 15.4 | Sandy loam | 0.75 | 7.60 |
| Field 83 | | | | | | |
| 831 | 66.8 | 12.0 | 21.2 | Sandy clay loam | 1.25 | 11.76 |
| 832 | 64.8 | 14.0 | 21.2 | Sandy clay loam | 2.75 | 12.40<br>12.40* |
| 833 | 69.8 | 12.8 | 17.4 | Sandy loam | 0.0 | 8.56<br>8.96* |

Table 4. (Continued).

| Sample No. | % Sand | % Silt | % Clay | Texture | $SO_4$-S ppm | CEC meq/100 g |
|---|---|---|---|---|---|---|
| Field 84 | | | | | | |
| 841 | 65.8 | 13.0 | 21.2 | Sandy clay loam | 3.00 | 10.72 |
| 842 | 56.8 | 16.0 | 27.2 | Sandy clay loam | 2.75 | 12.40 |
| 843 | 64.6 | 17.8 | 17.6 | Sandy loam | 2.75 | 9.60 |
| Field 85 | | | | | | |
| 851 | 77.6 | 5.4 | 17.0 | Sandy loam | 11.75 | 8.08 |
| 852 | 76.6 | 7.0 | 16.4 | Sandy loam | 12.75 | 8.00 |
| 853 | 71.6 | 11.0 | 17.4 | Sandy loam | 8.50 | 8.80 |
| Field 86 | | | | | | |
| 861 | 76.6 | 6.2 | 17.2 | Sandy loam | 7.50 | 8.08 |
| 862 | 70.6 | 11.6 | 17.8 | Sandy loam | 7.50 | 9.52 |
| 863 | 68.6 | 12.0 | 19.4 | Sandy loam | 7.25 | 10.40 |
| | 68.6* | 12.0* | 19.4* | | | 11.28* |

* Duplicate samples.

Table 5. Results of soil sample analysis for blue grama soil samples.

| Sample No. | pH | Cond. (Salts) | Lime | % O.M. | P ppm | K ppm | $NO_3$-N ppm | Zn ppm | Fe ppm | Cu ppm | Mn ppm |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1-1 | 6.3 | 0.2 | Low | 1.0 | 12.8 | 185 | 0.0 | 0.58 | 18.2 | 0.72 | 10.60 |
| 1-2 | 6.3 | 0.2 | Low | 1.3 | 21.0<br>22.5* | 215 | 0.0 | 0.56 | 23.4 | 0.72 | 9.20 |
| 1-3 | 6.3 | 0.2 | Low | 1.3 | 19.5<br>22.0* | 258 | 0.0 | 0.78 | 29.4 | 0.92 | 13.60 |
| 1-4 | 5.8 | 0.3 | Low | 1.6 | 22.8<br>22.5* | 263 | 0.0 | 0.92 | 38.5 | 0.96 | 18.00 |
| 1-5 | 6.8 | 0.2 | Low | 1.6 | 10.8 | 375 | 0.0 | 0.46 | 11.4 | 0.60 | 9.40 |
| 1-6 | 6.3 | 0.2 | Low | 1.3 | 7.8 | 330 | 0.0 | 0.36 | 13.2 | 0.70 | 9.40 |
| 1-7 | 6.8 | 0.2 | Low | 1.3 | 7.3 | 320 | 0.0 | 0.48 | 11.0 | 0.36 | 4.80 |
| 1-8 | 6.7 | 0.2 | Low | 1.4 | 14.5 | 340 | 0.0 | 0.64 | 13.8 | 0.70 | 9.20 |
| 1-9 | 6.3 | 0.2 | Low | 1.2 | 11.0 | 290 | 0.0 | 0.76 | 15.2 | 0.70 | 8.40 |
| 2-0 | 6.3 | 0.3 | Low | 1.2 | 23.0 | 320 | 0.0 | 0.58 | 13.4 | 0.68 | 11.00 |
| | 6.4* | 0.4* | Low* | 1.1* | 18.0* | 285* | 0.5* | 0.56* | 13.2* | 0.60* | 11.20* |
| 2-1 | 6.2 | 0.3 | Low | 1.8 | 23.0<br>18.5* | 370 | 1.3 | 1.40 | 31.6 | 1.02 | 18.00 |
| 2-2 | 5.9 | 0.3 | Low | 1.5 | 20.0<br>17.5* | 375 | 3.8 | 1.22 | 33.0 | 1.06 | 20.60 |
| 2-3 | 6.5 | 0.3 | Low | 1.8 | 19.8<br>19.0* | 385 | 3.4 | 2.20 | 35.0 | 4.60 | 18.00 |
| 2-4 | 6.4 | 0.2 | Low | 1.1 | 23.5<br>24.5* | 258 | 0.0 | 1.92 | 30.5 | 0.88 | 10.80 |
| 2-5 | 7.3 | 0.2 | Low | 0.9 | 15.8 | 290 | 0.0 | 0.54 | 5.1 | 0.40 | 4.40 |
| 2-6 | 7.6 | 0.3 | Low | 1.0 | 2.3 | 230 | 0.0 | 0.50 | 3.2 | 0.34 | 3.20 |
| 2-7 | 7.0 | 0.4 | Low | 2.0 | 9.5 | 360 | 0.0 | 0.64 | 7.5 | 1.32 | 6.40 |
| 2-8 | 6.9 | 0.3 | Low | 0.8 | 14.3 | 250 | 0.0 | 0.76 | 10.0 | 0.84 | 6.00 |
| 2-9 | 6.3 | 0.3 | Low | 1.3 | 11.8 | 345 | 0.0 | 0.60 | 14.2 | 0.84 | 15.00 |
| | 6.3* | 0.3* | Low* | 1.3* | 13.0* | 275* | 0.5* | 0.54* | 16.0* | 0.86* | 16.00* |
| 3-0 | 7.2 | 0.3 | Low | 1.3 | 7.3 | 305 | 0.0 | 0.48 | 4.8 | 0.44 | 4.00 |
| 3-1 | 6.0 | 0.2 | Low | 1.3 | 20.3<br>18.0* | 300 | 0.0 | 0.82 | 31.0 | 1.00 | 12.00 |
| 3-2 | 6.1 | 0.2 | Low | 1.1 | 17.0 | 190 | 0.0 | 0.66 | 22.7 | 0.72 | 10.00 |
| 3-3 | 6.0 | 0.2 | Low | 1.8 | 21.5 | 235 | 0.0 | 0.88 | 40.0 | 1.20 | 22.00 |
| 3-4 | 6.0 | 0.2 | Low | 1.2 | 21.5<br>19.0* | 243 | 0.0 | 1.76 | 40.0 | 1.26 | 11.20 |
| 3-5 | 6.1 | 0.2 | Low | 2.0 | 18.5 | 370 | 0.0 | 0.72 | 15.1 | 0.84 | 17.20 |
| 3-6 | 6.1 | 0.2 | Low | 1.4 | 14.5 | 245 | 0.0 | 0.70 | 20.4 | 0.94 | 12.80 |
| 3-7 | 6.3 | 0.2 | Low | 1.7 | 20.5<br>20.5* | 315 | 0.0 | 0.98 | 25.5 | 0.64 | 14.20 |

Table 5. (Continued).

| Sample No. | pH | Cond. (Salts) | Lime | % O.M. | P ppm | K ppm | $NO_3$-N ppm | Zn ppm | Fe ppm | Cu ppm | Mn ppm |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3-8 | 6.9 | 0.3 | Low | 2.7 | 10.5 | 478 | 0.0 | 0.98 | 12.2 | 0.86 | 16.80 |
| | 6.7* | 0.3* | Low* | 2.4* | 12.0* | 123* | 0.7* | 1.06* | 12.6* | 0.98* | 16.40* |
| 3-9 | 6.1 | 0.3 | Low | 2.0 | 20.5 | 360 | 0.5 | 1.42 | 33.8 | 1.26 | 10.80 |
| | | | | | 23.5* | | | | | | |
| 4-0 | 6.4 | 0.2 | Low | 0.6 | 20.0 | 375 | 0.3 | 0.66 | 21.8 | 0.70 | 10.20 |
| 4-1 | 6.1 | 0.3 | Low | 1.1 | 24.8 | 250 | 1.5 | 0.89 | 27.0 | 1.18 | 13.40 |
| | | | | | 21.5* | | | | | | |
| 4-2 | 5.9 | 0.3 | Low | 1.3 | 23.5 | 243 | 1.5 | 0.92 | 39.0 | 1.02 | 13.40 |
| 4-3 | 5.8 | 0.2 | Low | 1.2 | 22.8 | 250 | 1.4 | 0.71 | 26.6 | 0.84 | 18.00 |
| | | | | | 18.5* | | | | | | |
| 4-4 | 5.6 | 0.2 | Low | 1.2 | 23.0 | 263 | 1.1 | 0.82 | 35.8 | 1.18 | 17.20 |
| 4-5 | 6.1 | 0.1 | Low | 1.2 | 10.3 | 350 | 0.0 | 0.69 | 13.6 | 0.84 | 11.40 |
| 4-6 | 6.1 | 0.2 | Low | 1.4 | 19.8 | 275 | 0.3 | 0.89 | 24.6 | 1.36 | 14.80 |
| 4-7 | 5.8 | 0.2 | Low | 1.0 | 14.5 | 243 | 1.3 | 0.74 | 20.2 | 0.80 | 10.20 |
| | 6.1* | 0.2* | Low* | 0.8* | 13.5* | 198* | 0.8* | 0.60* | 19.2* | 0.74* | 9.40* |
| 4-8 | 6.2 | 0.2 | Low | 1.3 | 25.5 | 335 | 0.0 | 0.65 | 16.0 | 1.22 | 11.00 |
| | | | | | 19.5* | | | | | | |
| 4-9 | 5.9 | 0.2 | Low | 1.4 | 22.0 | 500+ | 0.0 | 1.12 | 26.0 | 1.72 | 17.60 |
| | | | | | 23.5* | | | | | | |
| 5-0 | 6.2 | 0.2 | Low | 1.0 | 16.5 | 300 | 0.0 | 0.78 | 14.5 | 0.62 | 10.00 |
| 5-1 | 5.7 | 0.2 | Low | 0.9 | 23.3 | 230 | 1.3 | 0.72 | 31.0 | 0.80 | 12.80 |
| | | | | | 20.5* | | | | | | |
| 5-2 | 5.8 | 0.2 | Low | 1.1 | 19.8 | 243 | 2.8 | 0.68 | 23.4 | 0.80 | 13.60 |
| 5-3 | 5.8 | 0.3 | Low | 1.0 | 24.0 | 230 | 0.7 | 0.83 | 24.3 | 0.94 | 13.40 |
| | | | | | 20.0* | | | | | | |
| 5-4 | 5.5 | 0.2 | Low | 1.1 | 28.5 | 275 | 0.5 | 1.54 | 33.0 | 5.00 | 14.80 |
| | | | | | 25.0* | | | | | | |
| 5-5 | 6.0 | 0.3 | Low | 1.2 | 18.8 | 290 | 0.8 | 0.68 | 16.8 | 0.68 | 15.60 |
| 5-6 | 6.1 | 0.2 | Low | 1.0 | 25.0 | 335 | 0.8 | 0.64 | 14.6 | 1.02 | 14.00 |
| | 6.3* | 0.2* | Low* | 0.9* | 22.0* | 258* | 0.8* | 0.54* | 13.8* | 0.86* | 14.40* |
| 5-7 | 6.0 | 0.2 | Low | 1.8 | 22.5 | 423 | 0.5 | 1.08 | 26.0 | 1.96 | 21.60 |
| 5-8 | 6.2 | 0.1 | Low | 0.9 | 15.5 | 258 | 0.8 | 0.36 | 19.5 | 1.00 | 16.00 |
| 5-9 | 5.7 | 0.2 | Low | 1.4 | 17.5 | 295 | 0.5 | 0.84 | 31.0 | 1.12 | 21.60 |
| 6-0 | 5.9 | 0.2 | Low | 1.5 | 24.0 | 390 | 0.5 | 1.08 | 30.4 | 0.78 | 14.00 |
| 6-1 | 5.7 | 0.2 | Low | 1.4 | 25.5 | 345 | 0.7 | 1.08 | 33.8 | 1.96 | 27.60 |
| 6-2 | 5.7 | 0.1 | Low | 1.4 | 23.0 | 315 | 0.3 | 0.83 | 35.0 | 1.00 | 21.60 |
| 6-3 | 6.1 | 0.2 | Low | 1.0 | 18.5 | 370 | 0.5 | 1.00 | 15.6 | 1.14 | 17.60 |
| 6-4 | 5.9 | 0.1 | Low | 1.1 | 19.5 | 270 | 0.5 | 0.85 | 18.0 | 0.70 | 15.60 |
| 6-5 | 6.4 | 0.3 | Low | 0.9 | 6.3 | 225 | 0.3 | 0.41 | 11.6 | 0.72 | 7.60 |
| | 6.4* | 0.3* | Low* | 0.9* | 5.0* | 185* | 0.3* | 0.38* | 11.0* | 0.64* | 6.20* |

Table 5. (Continued).

| Sample No. | pH | Cond. (Salts) | Lime | % O.M. | P ppm | K ppm | $NO_3$-N ppm | Zn ppm | Fe ppm | Cu ppm | Mn ppm |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 6-6 | 5.8 | 0.2 | Low | 1.3 | 16.3 | 270 | 0.8 | 0.82 | 20.4 | 0.60 | 10.60 |
| 6-7 | 5.5 | 0.2 | Low | 1.1 | 24.0 | 270 | 1.4 | 0.64 | 23.8 | 0.60 | 13.60 |
| 6-8 | 5.8 | 0.2 | Low | 0.9 | 8.0 | 175 | 0.5 | 0.50 | 14.6 | 0.64 | 10.20 |
| 6-9 | 6.0 | 0.3 | Low | 2.1 | 23.3 | 500+ | 1.3 | 1.10 | 22.4 | 1.22 | 25.00 |
| 7-0 | 5.4 | 0.1 | Low | 1.8 | 20.3 | 335 | 0.5 | 0.77 | 29.4 | 1.16 | 26.40 |
| 7-1 | 6.0 | 0.2 | Low | 1.2 | 19.5 | 245 | 0.8 | 0.89 | 27.6 | 0.92 | 21.20 |
| 7-2 | 5.7 | 0.2 | Low | 1.1 | 14.5 | 280 | 0.0 | 0.56 | 23.4 | 0.88 | 19.60 |
| 7-3 | 6.1 | 0.2 | Low | 1.4 | 27.5 | 335 | 0.8 | 1.05 | 38.6 | 2.08 | 27.20 |
| 7-4 | 6.2 | 0.2 | Low | 1.3 | 26.0 | 285 | 1.3 | 1.04 | 23.4 | 1.96 | 17.60 |
| | 6.1* | 0.2* | Low* | 1.2* | | 215* | 0.8* | 0.96* | 23.4* | 1.98* | 14.80* |
| 7-5 | 5.9 | 0.2 | Low | 0.9 | 20.3 | 245 | 0.0 | 0.63 | 28.9 | 1.06 | 17.20 |
| 7-8 | 6.0 | 0.2 | Low | 2.5 | 19.8 | 500+ | 0.3 | 1.28 | 26.0 | 1.10 | 27.20 |
| 8-1 | 6.3 | 0.2 | Low | 1.2 | 16.5 | 305 | 0.5 | 0.61 | 16.6 | 0.64 | 13.00 |
| 8-2 | 6.6 | 0.2 | Low | 1.0 | 18.0 | 295 | 0.0 | 0.75 | 24.2 | 0.74 | 14.40 |
| 8-3 | 6.1 | 0.2 | Low | 1.3 | 13.5 | 335 | 0.0 | 0.77 | 26.7 | 0.84 | 18.40 |
| 8-4 | 6.2 | 0.2 | Low | 1.3 | 15.5 | 310 | 2.1 | 0.75 | 22.4 | 0.70 | 17.60 |

Table 5. (Continued).

| Sample No. | % Sand | % Silt | % Clay | Texture | $SO_4$-S ppm | CEC meq/100 g |
|---|---|---|---|---|---|---|
| 1-1 | 67.8 | 18.2 | 11.0 | Sandy loam | 2.25<br>2.00* | 7.44 |
| 1-2 | 67.8 | 17.6 | 14.6 | Sandy loam | 8.50<br>5.00* | 9.44 |
| 1-3 | 65.2 | 18.2 | 15.6 | Sandy loam | 2.00 | 8.40 |
| 1-4 | 66.8 | 18.6 | 14.6 | Sandy loam | 2.00 | 9.60 |
| 1-5 | 68.8 | 17.4 | 13.8 | Sandy loam | 2.25<br>2.25* | 10.36 |
| 1-6 | 68.8 | 17.4 | 13.8 | Sandy loam | 1.00 | 9.20 |
| 1-7 | 74.4 | 12.2 | 13.4 | Sandy loam | 1.00 | 8.80 |
| 1-8 | 70.4 | 15.8 | 13.8 | Sandy loam | 0.50 | 8.56 |
| 1-9 | 74.4 | 12.6 | 13.0 | Sandy loam | 0.50 | 6.80 |
| 2-0 | 71.4 | 14.0 | 14.6 | Sandy loam | 0.50 | 8.08<br>10.08* |
| 2-1 | 60.4<br>62.6* | 22.0<br>18.0* | 17.4<br>19.4* | Sandy loam | 0.50 | 8.96 |
| 2-2 | 56.6 | 25.6 | 17.8 | Sandy loam | 0.25 | 9.60 |
| 2-3 | 58.6 | 24.6 | 16.8 | Sandy loam | 2.50<br>3.00* | 9.44 |
| 2-4 | 67.6 | 15.6 | 16.8 | Sandy loam | 0.50<br>0.75* | 7.68 |
| 2-5 | 78.6 | 7.6 | 13.8 | Sandy loam | 0.25<br>0.50* | 7.68 |
| 2-6 | 70.6 | 16.6 | 12.8 | Sandy loam | 0.50<br>0.75* | 9.41 |
| 2-7 | 47.6<br>46.4* | 29.6<br>28.0* | 22.8<br>25.6* | Loam | 0.25<br>0.50* | 14.20 |
| 2-8 | 75.6 | 7.6 | 16.8 | Sandy loam | 0.50<br>0.75* | 8.08 |
| 2-9 | 65.5 | 19.2 | 15.2 | Sandy loam | 1.00<br>1.25* | 8.08<br>8.80* |
| 3-0 | 67.6 | 18.6 | 13.8 | Sandy loam | 1.00<br>0.75* | 8.96 |
| 3-1 | 65.6 | 19.6 | 14.8 | Sandy loam | 0.50<br>0.75* | 7.28 |
| 3-2 | 65.6 | 19.6 | 14.8 | Sandy loam | 0.50 | 5.36 |
| 3-3 | 60.4 | 20.2 | 19.4 | Sandy loam | 0.25<br>0.50* | 8.96 |

Table 5. (Continued).

| Sample No. | % Sand | % Silt | % Clay | Texture | $SO_4$-S ppm | CEC meq/100 g |
|---|---|---|---|---|---|---|
| 3-4 | 58.0 | 22.6 | 19.4 | Sandy loam | 0.50<br>0.75* | 8.96 |
| 3-5 | 58.4 | 23.2 | 18.4 | Sandy loam | 3.00<br>4.00* | 11.20 |
| 3-6 | 62.4 | 21.2 | 16.4 | Sandy loam | 2.00 | 9.20 |
| 3-7 | 60.8 | 23.2 | 16.0 | Sandy loam | 2.00 | 10.00 |
| 3-8 | 55.4 | 24.8 | 20.8 | Sandy clay loam | 2.50 | 18.60<br>18.00* |
| 3-9 | 66.4 | 18.6 | 15.0 | Sandy loam | 2.25 | 11.68 |
| 4-0 | 70.8 | 12.8 | 16.4 | Sandy loam | 0.50 | 7.44 |
| 4-1 | 68.4 | 17.2 | 14.4 | Sandy loam | 1.00 | 7.12 |
| 4-2 | 68.4 | 15.2 | 16.4 | Sandy loam | 2.25 | 8.08 |
| 4-3 | 66.4 | 18.2 | 15.4 | Sandy loam | 0.25 | 8.08 |
| 4-4 | 66.4 | 18.2 | 15.4 | Sandy loam | 1.25 | 8.32 |
| 4-5 | 62.4 | 19.8 | 17.8 | Sandy loam | 2.25 | 10.80 |
| 4-6 | 68.8 | 16.6 | 14.6 | Sandy loam | 2.00 | 6.80 |
| 4-7 | 70.4 | 12.8 | 16.8 | Sandy loam | 2.50 | 10.80<br>10.56* |
| 4-8 | 66.6 | 18.2 | 15.2 | Sandy loam | 2.50 | 12.00 |
| 4-9 | 61.4 | 22.4 | 16.2 | Sandy loam | 2.00 | 10.08 |
| 5-0 | 72.4 | 13.8 | 13.8 | Sandy loam | 1.00 | 7.04 |
| 5-1 | 71.4 | 15.0 | 13.6 | Sandy loam | 1.00 | 8.32 |
| 5-2 | 68.4 | 16.4 | 15.2 | Sandy loam | 2.00 | 8.80 |
| 5-3 | 70.1 | 16.2 | 13.4 | Sandy loam | 1.00<br>0.75* | 8.00 |
| 5-4 | 68.4 | 17.0 | 14.6 | Sandy loam | 0.0<br>0.50* | 8.32 |
| 5-5 | 76.4<br>69.8* | 11.0<br>15.8* | 12.6<br>14.4* | Sandy loam | 0.50 | 7.36 |
| 5-6 | 70.4 | 16.0 | 13.6 | Sandy loam | 0.50 | 8.00<br>8.32* |
| 5-7 | 65.4 | 18.0 | 16.6 | Sandy loam | 2.00 | 10.56 |
| 5-8 | 69.4 | 14.8 | 15.8 | Sandy loam | 0.50 | 8.08 |
| 5-9 | 57.4 | 23.0 | 19.6 | Sandy loam | 2.00<br>2.75* | 10.08 |

Table 5. (Continued).

| Sample No. | % Sand | % Silt | % Clay | Texture | $SO_4$-S ppm | CEC meq/100 g |
|---|---|---|---|---|---|---|
| 6-0 | 68.4 | 15.8 | 15.8 | Sandy loam | 0.0<br>0.25* | 9.20 |
| 6-1 | 61.0 | 22.0 | 17.0 | Sandy loam | 0.0<br>0.25* | 10.48 |
| 6-2 | 65.6 | 18.0 | 16.4 | Sandy loam | 0.50 | 10.08 |
| 6-3 | 69.2 | 14.2 | 16.6 | Sandy loam | 0.25 | 8.32 |
| 6-4 | 69.2 | 17.4 | 13.4 | Sandy loam | 0.50 | 8.32 |
| 6-5 | 68.2 | 16.0 | 15.8 | Sandy loam | 0.25 | 10.32<br>10.80* |
| 6-6 | 78.6<br>58.8* | 10.6<br>27.8* | 10.8<br>13.4* | Sandy loam | 0.25 | 8.32 |
| 6-7 | 71.2 | 17.6 | 11.2 | Sandy loam | 0.50 | 8.00 |
| 6-8 | 80.2<br>80.8* | 8.0<br>6.0* | 11.8<br>13.2* | Sandy loam | 0.75<br>0.50* | 6.40 |
| 6-9 | 58.2 | 22.6 | 19.2 | Sandy loam | 0.50 | 13.44 |
| 7-0 | 61.2 | 19.8 | 19.0 | Sandy loam | 0.25 | 11.04 |
| 7-1 | 65.2 | 17.6 | 17.2 | Sandy loam | 1.00 | 9.20 |
| 7-2 | 69.4 | 16.0 | 14.6 | Sandy loam | 1.00 | 8.80 |
| 7-3 | 64.4 | 18.0 | 17.6 | Sandy loam | 1.00 | 10.48 |
| 7-4 | 66.4 | 19.6 | 14.0 | Sandy loam | 1.00 | 8.08<br>8.96* |
| 7-5 | 73.4 | 12.4 | 14.2 | Sandy loam | 1.25 | 7.28 |
| 7-8 | 60.4 | 21.0 | 18.6 | Sandy loam | 0.50 | 13.76 |
| 8-1 | 78.4 | 10.0 | 11.6 | Sandy loam | 1.00 | 6.96 |
| 8-2 | 70.4 | 16.0 | 13.6 | Sandy loam | 0.50 | 8.40 |
| 8-3 | 72.4 | 14.0 | 13.6 | Sandy loam | 1.50 | 8.80 |
| 8-4 | 69.4 | 15.2 | 15.4 | Sandy loam | 0.50 | 9.44 |

* Duplicate sample.

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